PENGOLAHAN LIMBAH CAIR INDUSTRI MIE MENJADI AIR BERSIH MENGGUNAKAN SISTEM LAPISAN MULTI MEDIA (LMM)

ABSTRAK

Lapisan Multi Media (LMM) merupakan metoda pengolahan limbah cair dengan memanfaatkan tanah sebagai media utama yang dibentuk seperti balok bata dan disusun secara selang-seling diantara zeolit. Sistem LMM terbuat dari Akrilik (50x15x50)cm berisikan balok bata (4x9x15) cm campuran tanah vulkanik, arang, serbuk gergaji dan serbuk besi (7,5 :1 :1 : 0,5), lapisan permiable digunakan zeolit (1-3 mm). Sampel berasal dari limbah cair industri mie. Penelitian dengan empat variasi laju alir 10, 20, 40 dn 80 mL/menit (aerasi dan nonaerasi) diperoleh efisiensi proses aerasi laju alir 10 mL/menit yang paling baik untuk menurunkan zat warna tartrazin, TSS, BOD, COD, pospat, Nitrat, Nitrit, dan lemak minyak berturut-turut sebesar 76,86%, 97,41%, 96,87%, 98,51%, 99,43%, 79,43%, 83,65%, dan 100%; Proses non aerasi laju alir 10 mL/menit didapatkan nilai zat warna tartrazin, BOD, COD, pospat, Nitrat, Nitrit, Fosfat dan lemak minyak berturut turut 82,18%,96,94%,96,49%, 98,26%, 99,21%, 70,95%,83,02% dan 100%.

Kata kunci: *Lapisan Multi Media, serbuk gergaji, Zeolit, limbah cair industri mie.*

TREATMENT OF WASTEWATER NOODLES INDUSTRY WITH A MULTI-SOIL-LAYERING (MSL) SYSTEM

ABSTRACT

The study of treatment of wastewater noodle industry was investigated. The Multi Soil Layering (MSL) system was constructed in a 50 cm (L) x 15 cm (W) x 50 (H) cm of acrylic box. Volcanic soil was mixed with charcoal, sawdust and iron scraps at a ratio of 75:10:10:5, respectively, based on dry weight. The soil mixture was filled into the box as blocks forming a brick-like layer pattern. The spaces between the soil blocks were filled with zeolite (1-3 mm). This experiment was done using aeration and nonaeration method, the wastewater was loaded periodically to the MSL system. The loading rate of wastewater varied from 10, 20, 40 and 80 mL min^{-1}. On the aeration and nonaeration method have optimum condition on loading rate on 10 ml/min, the removal efficiency of Tartrazin, TSS, BOD, COD, phosphate, Nitrates, Nitrite, and greases and oils were 76,86%, 97,41%, 96,87%, 98,51%, 99,43%, 79,43%, 83,65%, 100% and 82,18%,96,94%,96,49%, 98,26%, 99,21%, 70,95%,83,02%, 100%, respectively.

Keywords: Multi Soil Layering (MSL), Sawdust, Zeolite, Wastewater Noodles Industry.